TWO NEW SPECIES OF CEANOTHUS FROM CALIFORNIA

H. E. McMinn

Ceanothus serrulatus n. sp. Low prostrate evergreen shrub, thickly matting the ground; branches grayish or reddish, often rooting; leaves predominantly alternate, sometimes opposite near the ends of the younger branchlets, thin but firm, narrowly to broadly elliptical, rounded or obtuse at apex, tapering to rounded at base, ½ to ¾ inch long, ¼ to ½ inch wide, prominently veined beneath, with one main vein and often with 2 sublateral veins from the base, pale green and ultimately glabrous above, paler and densely microscopically flocculent-canescent beneath, especially on the veinlets, finely serrate except near the base; petioles about ⅛ inch long; stipules small, early deciduous; stomata in sunken pits on the lower surfaces of the leaves; flower-clusters short racemose, cylindrical, or subglobose, ½ to 1 inch long, terminating short leafy lateral branchlets; flowers white, rarely pale blue; fruit not known.

Type in the Dudley Herbarium, collected in a shallow draw between Emerald Bay and Cascade Lake, El Dorado County, California, H. E. McMinn 1734, May 30, 1926. Other collections: H. L. Mason 3316, May 30, 1926, from same locality.

This species is known only from the type locality where it occurs with Ceanothus prostratus Bentham, Ceanothus velutinus Douglas, and Ceanothus cordulatus Kellogg. The prostrate habit and the presence of sunken stomatal pits on the underside of the leaves relate it to C. prostratus Bentham, but the predominantly alternate, thinner and finely serrate leaves, the small early deciduous stipules, alternate branching, and short racemose clusters of white flowers easily separate it from that species. This is the only species of Ceanothus belonging to the Euceanothus section of the genus that has been found to have sunken stomatal pits on the under surfaces of the leaves. It may have arisen as a hybrid between C. prostratus Bentham and one of the other two alternate-leaved species found in the same locality.

Ceanothus Ferrisae n. sp. Erect evergreen shrub, 3 to 6 feet high, with long stiff divergent branches and numerous short decussate lateral branchlets; leaves opposite, orbicular to broadly elliptical, abruptly tapering to rounded at base, ½ to 1¼ inches long, ¼ to ¾ inch wide, with one vein from the base, dark green and glabrous above, paler and microscopically canescent beneath, regularly to irregularly short toothed or some leaves almost entire, the margins slightly revolute between the short teeth; petioles about ⅛ inch long; stipules persistent, thick, and corky; stomata in sunken pits on the underside of the leaves; flowers white, in umbels ½ to 1 inch long; capsules globose, $\frac{3}{16}$ to $\frac{5}{16}$ inch in diameter, with 3 dorsal or sub-dorsal horns, without intermediate crests.

Type in the Dudley Herbarium, collected above Coyote Creek, Madrone Springs road, Mt. Hamilton Range, Santa Clara County,

Madroño, vol. 2, pp. 89-96. Apr. 26, 1933.

California, LeRoy Abrams 6626, August 13, 1917. Other collections: LeRoy Abrams 6627, 6628, from same locality. Roxana Ferris 832, May 17, 1918, from hillslope above first bridge on Cochran road 2½ miles east of Madrone station, Santa Clara County. H. E. McMinn 1873, December 21, 1928, and 1887a—z, January, 1929, from same location as Ferris 832, and 2649, August 29, 1931, from hillslope about ½ mile southeast of the above location. All collections seen have been made from the Coyote River region east of Madrone station in the Mt. Hamilton Range. A few plants of C. cuneatus Nuttall were found associated with one colony of this new species, but apparently they do not occur commonly together.

This species is related to C. cuneatus Nuttall but differs from the typical form of that species in its larger, more elliptical, and variously toothed leaves. The regularly and finely toothed leaves of some specimens resemble the leaves of C. rigidus var. grandifolius Torrey, but the flowers are white instead of blue as in that variety. In the Santa Cruz Mountains there is a form of C. cuneatus Nuttall with large leaves which is closely related to this species, but all the leaves are entire in contrast to the toothed leaves of C. Ferrisae.

In 1928 a set of 60 transplants was collected and set out in the trial garden at Mills College. An examination of the plants in January, 1933, showed the same characteristic variation in leaf margins as exhibited by plants in their native habitat.

In the Contributions from the Dudley Herbarium of Stanford University, vol. I, number 4, 1930, I referred to this plant as a variation of C. cuneatus Nuttall.

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DUPLICATE CARVINGS IN TREES

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Land surveyors are familiar with the use of trees as monuments to mark a corner of a survey, or, what is more common, as "bearing" or "witness" trees which serve to aid in determining the position of a corner in case the monument which originally marked the corner has been destroyed or removed. A tree which is to serve such purpose is first blazed so as to expose a flat surface of young wood just beneath the cambium and in the wood thus exposed there are carved the characters which identify this particular tree. In time these carvings and the whole area from which the bark was removed become completely covered with new bark which grows inward from the margins of the wound. The cambium layer within this new bark gives rise, during the succeeding years, to new layers of wood which cover the original inscriptions. so that in time the characters cut by the surveyor may be buried deep within the trunk of the tree. After many